

## DOCUMENT RESUME

ED 227 750

HE 015 989

AUTHOR Forrester, Robert T.; Wesolowski, Leonard V.  
TITLE Cost Recovery Through Depreciation.  
INSTITUTION National Association of Coll. and Univ. Business Officers, Washington, D.C.  
PUB DATE Feb 83  
NOTE 6p.  
AVAILABLE FROM National Association of College and University Business Officers, One Dupont Circle, Suite 510, Washington, DC 20036 (up to 10 copies free, 10 or more \$.25 per copy).  
PUB TYPE Journal Articles (080) -- Viewpoints (120)  
JOURNAL CIT Business Officer; pl2-15 Feb 1983  
EDRS PRICE MF01 Plus Postage. PC Not Available from EDRS.  
DESCRIPTORS \*Assessed Valuation; \*College Buildings; \*Equipment Utilization; \*Facility Inventory; Facility Utilization Research; Federal Aid; \*Federal Regulation; Higher Education; \*School Accounting  
IDENTIFIERS Sponsored Research

## ABSTRACT

The approach of adopting depreciation rather than use allowance in order to recover more accurately the cost of college buildings and equipment used on federal projects is considered. It is suggested that depreciation will offer most colleges and universities a higher annual recovery rate, and an opportunity for better facilities planning. For buildings, calculating depreciation would involve: identifying and appraising the cost of each building component; calculating depreciation costs based on the life of each component; and allocating such costs to the government according to the space used by sponsored projects. Ten steps in a typical building study are also identified. Conceptual uncertainties persist concerning some important matters, including imputed depreciation, the period of recovery for depreciation accumulated from prior years, acceptable asset lives, and the treatment of the federal contributions to building and equipment costs. Pertinent federal regulations are noted, and it is proposed that accumulated depreciation should be recovered over the remaining useful lives of the assets. For institutions that do not choose to depreciate, it is suggested that use allowance be increased significantly. (SW)

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## Cost Recovery Through Depreciation

by ROBERT T. FORRESTER and LEONARD V. WESOLOWSKI

**B**usiness officers should consider adopting depreciation rather than use allowance in order to recover more accurately the cost of buildings and equipment used on federal projects. Depreciation will offer most colleges and universities a higher annual recovery rate. This recovery may help to sustain the quality of research programs in times of economic adversity.

A change from use allowance to depreciation is not a simple matter. Conceptual uncertainties and differing interpretations remain. In the long run, reduced composite lives (such as those adopted in 1951 by the Internal Revenue Service) may be easier to implement than depreciation of components; but until recovery guidelines change, our experience at Yale, where an appraiser performed the study, and at Harvard, where a public accounting firm was involved, may benefit others who are considering depreciation.

**Why depreciate?** Generally accepted accounting principles at colleges and universities preclude the recognition of depreciation as a current operating expense. Government recovery principles, including Office of Management and Budget (OMB) Circular A-21, permit institutions to re-

cover building and equipment costs through a simple calculation of use allowance; and the government has offered depreciation as an alternative for many years. Why, then, should depreciation be a popular topic at this time?

The most obvious reason is to bring cost recovery more in line with actual experience. OMB's 2 percent annual recovery is based on a theoretical 50-year composite building life. While the "shells" of many college and university buildings are much older than 50 years, the weighted average composite life of these buildings—including their plumbing, electrical, and heating systems and their ever-changing interior walls—may be much shorter. A school previously recovering building costs at 2 percent and equipment at 6 2/3 percent a year might possibly double this recovery by recognizing the actual lives of building components and equipment items through depreciation. Those who continue to employ use allowance at 2 percent or 6 2/3 percent may recover an inadequate amount.

Depreciation also offers institutions an opportunity for better facilities planning. Once management has formally identified the useful lives of its building components and its research equipment, it can measure more accurately the likely expiration of their capital costs and plan for renovating and replacing them. Depreciation, much better than use allowance, addresses the capital crisis discussed by the National Council on Research and the Reagan Administration's

*Robert T. Forrester is a partner with the public accounting firm of Coopers & Lybrand. Leonard V. Wesolowski is comptroller and associate vice president for finance and administration at Yale University.*

plans for "reindustrialization." Finally, if the government ties the interest recovery set forth in the August 1982 revisions to A-21 to the life of the building or major equipment, depreciation would afford colleges and universities a better basis for reimbursement of this interest.

It should not be a surprise, then, that depreciation has interested many institutions recently. Although we are not certain, we believe that a number of research institutions have either adopted depreciation for the recovery of building or equipment cost or are considering it. Property management systems installed at some colleges and universities now provide for the identification of the lives of particular pieces or classes of equipment, and allow for their subsequent depreciation. Certain schools have also built depreciation-like recoveries into their operating budgets, so that students, as well as the government, pay for the cost of the facilities they use, rather than the equipment that happens to be purchased, or the buildings that are constructed or renovated, during a particular school year.

**What are the regulations?** Both depreciation and use allowance were allowed under Federal Management Circular (FMC) 73-8. There is no basic change under A-21, though this pronouncement precludes the use of depreciation for certain assets when use allowance is adopted for other assets of the same class. The accounting principles set forth in *College and University Business Administration* do not preclude the recognition of depreciation in the plant fund, but do not recognize depreciation as a current operating expense; the same is true of the AICPA industry audit guide, *Audits of Colleges and Universities*. Depreciation charged to plant funds may be restored from current funds, of course, through transfer, which would provide a means of moving into plant funds any monies recovered through the indirect cost rate for use allowance or depreciation.

AICPA "Statement of Position 78-10," suggested for nonprofit enterprises for which there are no AICPA industry audit guides, specifies that depreciation be adopted. FASB's "Statement of Financial Accounting Concepts No. 4," dealing with nonbusiness organizations, does not specifically address the matter. Many observers foresee the possibility, however, of a single set of accounting principles for nonprofit

enterprises that favor depreciation, particularly as cost-based revenue sources increase.

**How does one adopt depreciation accounting?** There are several methods of calculating depreciation. For buildings, such a calculation would:

1. Identify and appraise the cost of each building component.
2. Calculate depreciation costs based on the life of each component.
3. Allocate such costs to the government according to the space used by sponsored projects.

A typical building study would include the following steps:

1. Determine the buildings to be included; normally, these would be the ones included in the indirect cost proposal, possibly including administrative facilities, if they were significant.
2. Identify each type of building component and establish its useful life, based on the institution's plans or on the appraiser's judgment.
3. Estimate original costs of the components for each building and for subsequent additions or alterations. (Although total original costs of construction, alteration, and renovation may be known, the distribution of costs across the various building components is usually not available and must be estimated with the aid of accepted appraisal techniques.)
4. Deduct the portion of alteration costs where the alteration replaces some portion of an original asset.
5. Deduct the amount of federal participation from the total cost to be depreciated.
6. Reduce the total building depreciation by the original cost of any previously identified fixed equipment for which use allowance or depreciation is being taken.
7. Calculate annual depreciation for each component within each vintage.
8. Consider the effect of use allowance already taken to assure that recovery will not exceed the total cost of the assets.
9. Consider the effect of depreciation "imputed" to any period before the buildings were used on federal projects.
10. Update the studies in future years as necessary.

A study of 30 to 50 buildings might take six months. At both Harvard and Yale the cost of the study will be recovered in the first year. The

benefit will increase if the government can provide a favorable solution to the conceptual uncertainties and differing interpretations discussed below.

**What are the conceptual uncertainties?** Since applications of depreciation have been limited, NACUBO's Council on Governmental Relations (COGR) and the federal government have not yet agreed on some important matters, including "imputed" depreciation, the period of recovery for depreciation "accumulated" from prior years, acceptable asset lives, and the treatment of the federal contributions to building and equipment costs.

**"Imputed" depreciation.** In our conversations, officials of the Department of Health and Human Services (HHS) have contended that institutions cannot recover depreciation that would have "accumulated" during the period that use allowance was taken. Such a recovery, they argue, would represent a retroactive accounting change to a costing method previously negotiated.

Assume that an institution adopted depreciation for a \$100,000 computer in the seventh year of its eight-year life. Use allowance during the first six years amounted to \$40,000 (6 2/3 percent x 6 x \$100,000). It would appear that \$60,000 remains to be depreciated over the remaining two years. HHS's stated position, however, is that recovery during these two years should not exceed 12 1/2 percent a year. \$75,000 of depreciation would be "imputed" by HHS to the first six years, leaving only \$25,000 to depreciate over the final two years. If the computer is retired with no salvage value in its eighth year, \$35,000 (60 percent minus 25 percent) would never be recovered.

The HHS position precludes the recovery of all acquisition costs, and thus contradicts the concept of full recovery set forth in use cost principles. Section J(9)(B)(3) of A-21 states: "Where the depreciation method is introduced for application to assets for which use allowance was previously charged, the aggregate amount of use allowances and depreciation applicable to such assets must not exceed the total acquisition cost of the assets."

In fact, the concept of fully "imputed" depreciation contradicts HHS's own interpretation of A-21, issued in December 1979. This interpretation contains language and an example clearly stating that depreciation must be imputed only to

any (pre-use allowance) period during which the building was not being used for federal projects. (By rights, a charge should also be "imputed" to any period in which an indirect cost "cap" would have precluded additional recovery.) If one followed the interpretation, one would achieve a reasonable, if not a full, recovery.

The IRS would take the unrecovered amount and depreciate it over the remaining useful life. Use allowance would be equivalent to one estimate of useful life (15 years), which was simply replaced by another estimate (eight years) during midlife. And "Statement of Position 78-10," while it does not apply to colleges and universities, specifies an immediate retroactive adjustment for all accumulated amounts when depreciation is adopted. Recovery should be assured under the cost principles themselves, given such precedents as a reasonable recovery over future years of previously unfunded pension costs.

It seems clear to the authors, then, that a change to depreciation represents a revision of useful lives rather than a change in costing principles. There must be some provision for recovery of "accumulated" depreciation. Otherwise, if the institution's new estimate of useful life were correct, the asset would expire before its total cost had been recovered.

We recognize the exposure to the federal government for millions of dollars of unrecovered depreciation. This depreciation accumulated, however, because the 2 percent allowance for buildings, and particularly the 6 $\frac{3}{4}$  percent allowance for equipment, were based on a composite life that was longer than actual experience. This shortfall should be recovered over the remaining lives of the assets.

**Recovery period for "accumulated" depreciation.** FMC 73-8 required the use of a depreciation rate that was no greater than the total life of the asset. Even if accumulated depreciation were allowed, an institution could not recover it over the remaining life of the asset under FMC 73-8. In the case of the computer described above, annual depreciation could not exceed 12 $\frac{1}{2}$  percent, and the computer would be retired before its cost was fully recovered.

The sentence limiting recovery was eliminated from A-21, which states only that depreciation and use allowance cannot exceed the cost of the asset. In its interpretation of A-21, however, HHS has retained the concept of a maximum depreciation rate. In our view, a reasonable compromise on this issue would allow a college or university to include the unrecovered balance in the depreciation base of a new asset or to re-

cover it over the remaining life actually expected if it differs from an appraised standard. Consider the electrical system of a particular building installed in 1964. The appraiser selected a 20-year life for recovery of his component. In 1982, therefore, only two years remained, though management did not plan to replace the system for another five years. In this case, the school might extend the remaining useful life to meet its own five-year replacement plan.

**Useful lives.** The 6 $\frac{3}{4}$  percent and 2 percent use allowances were meant to represent a composite life. Bricks and mortar may have been set in Old Main a hundred years ago, but its heating, ventilating, and air conditioning systems may have been replaced three times; hence the government assumes a 50-year average.

The authors' experience at Yale and Harvard, however, suggests that a shorter building life is more appropriate. Recent interior construction and renovations to service systems account for a large portion of the total cost of the older research buildings we use. Their bricks and mortar were purchased before the intense inflation of the 1970s, so that the foundation and shell of these buildings now represent only a small portion of their total cost. In newer buildings the pattern may be somewhat different but still considerably less than 50 years. At Yale, the development of useful lives in an inventory of movable equipment demonstrated that the 15-year life assumed by the 6 $\frac{3}{4}$  percent allowance was clearly inadequate.

**Increased use allowance—an alternative?** Many institutions may have accepted use allowance in the past because the cost of implementing depreciation was unknown. Our experience suggests that the initial cost of the survey and the expense of maintaining it may be substantial, but not out of line with the cost of other compliance studies, such as effort reporting and equipment inventories, which do not offer a similar potential for recovery.

For a variety of reasons, however, an institution may choose not to implement depreciation. Depreciation is still not a generally accepted accounting principle for colleges and universities, so the concept may be unfamiliar. A depreciation system might assist management in scheduling capital replacements, but institutions have introduced other ways of planning maintenance.

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### Exhibit 1: Depreciation Dos and Don'ts

*Do* get fixed asset records in order before the study begins. Renovations in particular may have been charged to capital funds, maintenance reserves, or to operations, and their costs must be accumulated from all these sources.

*Do* clear the way for the appraisal team with academic departments and with construction management building and grounds personnel.

*Do* computerize the study. There will be myriad vintage asset "pigeonholes" that may be summarized practically only by computer.

*Do* study major administrative buildings as well as research facilities.

*Do* consider the cost and benefit of integrating the study with the plant fund.

*Do* review major federal awards for

construction to identify the government's proportionate contribution to building components and to items of fixed and movable equipment.

*Don't* analyze all buildings without regard to cost and benefit. Twenty percent of the buildings may include 80 percent of research space.

*Don't* use only appraisers or accountants; use a team.

*Don't* proceed without prior discussions with your cognizant agency. Depreciation should be cleared in advance under most indirect-cost agreements.

*Don't* depreciate some buildings or equipment, while taking use allowance on others, without discussing the matter with the cognizant agency. Such inconsistency is prohibited by A-21.

## Exhibit 2: Recovery Alternatives

|                                                                                    | Building Cost | Inflation in Construction Cost | Interest Rate | Annual Recovery        | Present Value of Recovery Stream |
|------------------------------------------------------------------------------------|---------------|--------------------------------|---------------|------------------------|----------------------------------|
| 1. 2 percent use allowance — low inflation/interest                                | \$1,000,000   | 3.5 percent                    | 4 percent     | 2.0 percent (50 years) | \$546,000                        |
| 2. 2 percent use allowance — high inflation/interest                               | 1,000,000     | 8.0 percent                    | 10 percent    | 2.0 percent (50 years) | 496,000                          |
| 3. 3 1/2 percent use allowance or component depreciation — high inflation/interest | 1,000,000     | 8.0 percent                    | 10 percent    | 3.3 percent (30 years) | 545,000                          |

In any case, experience convinces the authors that the assumptions underlying the 2 percent and 6 1/2 percent use allowance are out-of-date, and they fail to provide an adequate basis for recovering costs over estimated useful lives. Inadequate recovery could be a reason for, and certainly compounds, the widely recognized problem of deferred maintenance and aging equipment.

In the authors' view, the federal government should consider a substantial increase in the allowance for buildings and equipment in order to maintain use allowance as a reasonable alternative where component depreciation is not pursued. In conversations with the authors, officials at HHS have said that they support reasonable recovery of "hard" costs, such as buildings and equipment used in sponsored projects. The recovery of interest expense allowed in the August 1982 revisions to A-21 is a step in this direction; but this revision contains some questionable incentives and in any case addresses only the cost of financing rather than the principal invested in capital facilities.

Any revision of the present use allowances for buildings and equipment should be a matter of study. With regard to useful lives, our studies of components of recently constructed buildings suggest that recoveries over 25 to 35 years (2.8 percent to 4 percent) would be appropriate. Unrecovered costs of renovations to older buildings should be recovered even faster. In any case, however, the revised amount should reflect the actual pattern of use of building components and equipment; it should also enable the institution to deal with inflation in construction and equipment costs since the time 2 percent and 6 1/2 percent allowances might have made sense.

With regard to the effect of infla-

tion, one could view both use allowance and depreciation as providing a means of renovating and replacing facilities devoted to sponsored projects. Exhibit 2 illustrates the present value of this recovery "pool" in various situations. During the period 1961-1965 the cost of building construction rose by approximately 3.5 percent per year. Interest rates on ten-year Treasury obligations averaged 4 percent. Amounts recovered on a \$1 million building and subsequently invested in a "sinking fund" of Treasury obligations over 50 years would have been worth \$546,000 in original construction value.

During the period 1977-1981, construction costs increased by 8 percent a year, while interest rates averaged 10 percent. For that period, the 50-year recovery would be worth only \$496,000. A 30-year recovery increases the value of recovery to \$545,000 — nearly the value in the past under use allowance. The difference between these recovery levels and the original \$1 million arises because depreciation is based on original cost of the building rather than its replacement value. Neither component depreciation nor recovery of interest under A-21 will close this gap.

This article has dealt with some of the practical considerations related to depreciation of buildings and equipment. The authors believe that "accumulated" depreciation should be recovered over the remaining useful lives of the assets. For institutions that do not choose to depreciate, the authors believe use allowance should be increased significantly. ♦

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**Business Officer** (ISSN 0147-877X)  
is published monthly by NACUBO,  
One Dupont Circle, Suite 510,  
Washington, DC 20036, telephone  
202-861-2500. Second-class postage  
paid at Washington, DC. Of annual  
membership dues, \$10 is for a sub-  
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